

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/006281

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H02M3/335

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H02M H02J G05F H02H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 144 187 A (BRYSON STEVEN W) 7 November 2000 (2000-11-07) abstract column 2, line 52 - line 67 column 3, line 21 - line 22 column 3, line 29 - line 31 column 5, line 22 - line 26 figure 1	1, 2, 5, 15
Y		3, 4, 6-14, 16-20
X	US 5 801 522 A (MCKENZIE PHILIP JAMES) 1 September 1998 (1998-09-01) column 3, line 1 - line 18 figures 1, 2	1, 2, 5
	----- -/-- -----	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

8 November 2004

Date of mailing of the international search report

16/11/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Roider, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/006281

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 09, 30 September 1997 (1997-09-30) & JP 9 135598 A (NIPPON TELEGR & TELEPH CORP & NTT), 20 May 1997 (1997-05-20) abstract	1,2,5
Y	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 08, 30 August 1996 (1996-08-30) & JP 8 107680 A (NIPPON ELECTRIC IND CO LTD), 23 April 1996 (1996-04-23) abstract	3,4, 6-14, 16-20
Y	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 09, 30 September 1997 (1997-09-30) & JP 9 117147 A (YUASA CORP), 2 May 1997 (1997-05-02) abstract	3,4, 6-14, 16-20
Y	US 6 229 681 B1 (LEE JOO-HYOUNG) 8 May 2001 (2001-05-08) column 1, line 17 - line 27 column 4, line 4 - line 9 figure 1	4,12,17
Y	US 5 859 768 A (ALBERKRACK JADE H ET AL) 12 January 1999 (1999-01-12) column 8, line 2 - line 4 figures 1,5	4,12,17
A	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 04, 31 May 1995 (1995-05-31) & JP 7 031136 A (NEC CORP), 31 January 1995 (1995-01-31) abstract	1,5,15
A	US 6 252 783 B1 (HUH DONG-YOUNG ET AL) 26 June 2001 (2001-06-26) cited in the application abstract figure 1	1,5,15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/006281

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6144187	A	07-11-2000	NONE	
US 5801522	A	01-09-1998	US 6003139 A	14-12-1999
JP 9135598	A	20-05-1997	NONE	
JP 8107680	A	23-04-1996	NONE	
JP 9117147	A	02-05-1997	JP 3175756 B2	11-06-2001
US 6229681	B1	08-05-2001	NONE	
US 5859768	A	12-01-1999	JP 11018423 A	22-01-1999
JP 7031136	A	31-01-1995	NONE	
US 6252783	B1	26-06-2001	KR 2000065901 A DE 10016859 A1 JP 3333170 B2 JP 2000308343 A	15-11-2000 09-11-2000 07-10-2002 02-11-2000